

11c. Measurement	
Percent Repeat Reports - UNE	
Definition:	
Percent of customer trouble reports received within 30 calendar days of a previous customer report.	
Exclusions:	
<ul style="list-style-type: none"> • Specials and Interconnection Trunks • Excludes UNE Combos captured in the POTS or Specials measurements. • Excludes trouble tickets that are coded to Customer Premise Equipment, Interexchange Carrier/Competitive Access Provider, and Informational • Excludes loops without test access – BRI • Excludes DSL loops > 12Kf with load coils, repeaters, and/or excessive bridged tap for which the CLEC has not authorized conditioning unless coded to the Central Office. • Excludes trouble reports caused by lack of digital test capabilities on 2-wire and IDSL capable loops where acceptance testing is available and not selected by the CLEC. 	
Business Rules:	
Includes customer trouble reports received within 30 calendar days of an original customer report. When the second report is received in 30 days, the original report is marked as an Original of a Repeat, and the second report is marked as a Repeat. If a third report is received within 10 days, the second report is marked as an Original of a Repeat as well as being a Repeat, and the third report is marked as a Repeat. In this case there would be two repeat reports. If either the original or the second report within 30 days is a measured report, then the second report counts as a Repeat report.	
Levels of Disaggregation:	
<ul style="list-style-type: none"> • UNEs contained in the UNE price schedule, and / or agreed to by the parties. • DSL loops with line sharing • DSL loops with no line sharing • Broadband service product (Note : Additional disaggregations may be required as necessary in the future) 	
Calculation:	Report Structure:
Count of customer trouble reports received within 30 calendar days of a previous customer report ÷ total customer trouble reports) * 100	Reported for CLEC, all CLECs and SWBT and affiliates where appropriate
Benchmark:	
See following:	

Parity:	Retail Comparison
1. 8.0 dB Loop with Test Access and 8.0 dB Loop without Test Access (FW/NFW)	POTS (Bus FW/NFW)
2. 5.0 dB Loop with Test Access and 5.0 dB Loop without Test Access	Parity with SWBT VGPL
3. BRI Loop with Test Access	ISDN
4. ISDN BRI Port	ISDN
5. DS1 Loop with Test Access	DS1
6. DS1 Dedicated Transport	DS1
7. Subtending Channel (23B)	DDS
8. Subtending Channel (1D)	DDS
9. Analog Trunk Port	VGPL
10. Subtending Digital Direct Combination Trunks	VGPL
11. DS3 Dedicated Transport	DS3
12. Dark Fiber	DS3
13. DSL Loops – Line Sharing Retail)	DSL Loops with line sharing (ASI or SWBT
14. DSL Loops with no Line Sharing	12.0% - Critical z-value does not apply
15. Broadband DSL – Line Sharing Retail)	DSL Loops with line sharing (ASI or SWBT
16. Broadband DSL with no Line Sharing	12.0% - Critical z-value does not apply

12a. Measurement	
Mean Time to Restore - POTS	
Definition:	
Average duration of customer trouble reports from the receipt of the customer trouble report to the time the trouble report is cleared.	
Exclusions:	
<ul style="list-style-type: none"> Excludes subsequent reports. A subsequent report is one that is received while an existing repair report is open. Excludes disposition code "13" reports (excludable reports) with the exception of code 1316 unless the report is taken prior to the completion of the service order. 	
Business Rules:	
The clock starts on the date and time SWBT receives a trouble report. The clock stops on the date and time that SWBT personnel clear the repair activity and complete the trouble report in WFA.	
Levels of Disaggregation:	
POTS <ul style="list-style-type: none"> Business class of service Residence class of service Dispatch No Dispatch Affecting Service Out of Service UNE Combo <ul style="list-style-type: none"> Dispatch No Dispatch Affecting Service Out of Service 	
Calculation:	Report Structure:
$\Sigma[(\text{Date and time SWBT clears ticket with the CLEC}) - (\text{Date and time ticket received})] \div \text{Total customer trouble reports}$	Reported for POTS Resale trouble reports by CLEC, all CLECs and SWBT
Benchmark:	
POTS – Parity with SWBT Retail. UNE Combo – Parity with SWBT Business and Residence combined.	

12b. Measurement	
Mean Time To Restore - Design	
Definition:	
Average duration in calendar days of customer trouble reports from the receipt of the customer trouble report to the time that the trouble report is cleared.	
Exclusions:	
<ul style="list-style-type: none"> • UNE and Interconnection Trunk • No Access time • Delayed Maintenance time • Excludes trouble tickets that are coded to Customer Premise Equipment, Interexchange Carrier/Competitive Access Provider, and Informational 	
Business Rules:	
The start time is when the customer report is received and the stop time is when the report is closed in WFA. Specials are selected based on a specific service code off of the circuit ID.	
Levels of Disaggregation:	
<ul style="list-style-type: none"> • Resold Specials - DDS, DS1, DS3, Voice Grade Private Line (VGPL), ISDN and any other services available for resale • UNE Loop and Port - ISDN and other combinations • Dispatch • No Dispatch 	
Calculation:	Report Structure:
$\Sigma[(\text{Date and time trouble report is cleared with the customer}) - (\text{date and time trouble report is received})] \div \text{total network customer trouble reports}$	Reported for CLEC, all CLECs and SWBT
Benchmark:	
Parity with SWBT Retail	

12c. Measurement	
Mean Time To Restore - UNE	
Definition:	
Average duration of network customer trouble reports from the receipt of the customer trouble report to the time the trouble report is cleared excluding no access and delayed maintenance.	
Exclusions:	
<ul style="list-style-type: none"> • Specials and Interconnection Trunks • Excludes UNE Combos captured in the POTS or Specials measurements. • Excludes Customer Premise Equipment, Interexchange Carrier/Competitive Access Provider, and Informational • Excludes loops without test access – BRI • Excludes DSL loops > 12Kf with load coils, repeaters, and/or excessive bridged tap for which the CLEC has not authorized conditioning unless coded to the Central Office. • Excludes trouble reports caused by lack of digital test capabilities on 2-wire and IDSL capable loops where acceptance testing is available and not selected by the CLEC. 	
Business Rules:	
The start time is when the report is received. The stop time is the stop time is when the report is cleared in the appropriate system (WFA for all UNEs except DSL line sharing which is captured in LMOS)..	
Levels of Disaggregation:	
<ul style="list-style-type: none"> • DSL loops with line Sharing • DSL loops with no line sharing • Broadband service product (Note: Additional disaggregations may be required as necessary in the future. • UNEs contained in the UNE price schedule, and / or agreed to by the parties. • Also disaggregated by Dispatch/No Dispatch. 	
Calculation:	Report Structure:
$\frac{\sum[(\text{Date and time trouble report is cleared with the customer}) - (\text{date and time trouble report is received})] \div \text{total network customer trouble reports}}{\text{total network customer trouble reports}}$	Reported for CLEC, all CLECs and SWBT and SWBT Affiliate
Benchmark:	
<ul style="list-style-type: none"> • See following: 	

Parity:	Retail Comparison
1. 8.0 dB Loop with Test Access and 8.0 dB Loop without Test Access (FW/NFW)	POTS (Bus FW/NFW)
2. 5.0 dB Loop with Test Access and 5.0 dB Loop without Test Access	Parity with SWBT VGPL
3. BRI Loop with Test Access	ISDN
4. ISDN BRI Port	ISDN
5. DS1 Loop with Test Access	DS1
6. DS1 Dedicated Transport	DS1
7. Subtending Channel (23B)	DDS
8. Subtending Channel (1D)	DDS
9. Analog Trunk Port	VGPL
10. Subtending Digital Direct Combination Trunks	VGPL
11. DS3 Dedicated Transport	DS3
12. Dark Fiber	DS3
13. DSL Loops – Line Sharing	Parity with ASI or SWBT Retail
14. DSL Loops – No Line Sharing	9.0 hours - No Critical z-value does not apply
15. Broadband DSL – Line Sharing	Parity with ASI or SWBT Retail
16. Broadband DSL – No Line Sharing	9.0 hours - No Critical z-value does not apply

13a. Measurement	
Trouble Report Rate - POTS	
Definition:	
The number of electronic or manual customer trouble reports per 100 lines.	
Exclusions:	
<ul style="list-style-type: none"> Excludes reports caused by customer provided equipment (CPE) or wiring Excludes all disposition "13" reports (excludable reports) with the exception of code 1316 unless the report is taken prior to the completion of the service order. 	
Business Rules:	
CLEC and SWBT repair reports are entered into and tracked via WFA. They are downloaded nightly into LMOS. Reports are counted in the month they post to LMOS.	
Levels of Disaggregation:	
POTS <ul style="list-style-type: none"> Business class of service Residence class of service UNE Combo - None	
Calculation:	Report Structure:
[Total number of customer trouble reports ÷ (total lines ÷ 100)]	Reported for POTS Resale trouble reports by CLEC, all CLECs and SWBT
Benchmark:	
POTS – Parity with SWBT Retail. UNE Combo – Parity with SWBT Business and Residence combined.	

13b. Measurement	
Trouble Report Rate	
Definition:	
The number of customer trouble reports within a calendar month per 100 circuits.	
Exclusions:	
<ul style="list-style-type: none"> • UNE and Interconnection Trunks • Excludes trouble reports coded to Customer Premise Equipment, Interexchange Carrier/Competitive Access Provider, and Informational 	
Business Rules:	
CLEC and SWBT repair reports are entered into and tracked via WFA. Reports are counted in the month they post.	
Levels of Disaggregation:	
See Measurement 4b.	
Calculation:	Report Structure:
[Count of network trouble reports ÷ (Total Resold circuits ÷ 100)]	Reported by CLEC, all CLECs and SWBT
Benchmark:	
Parity with SWBT Retail	

13c. Measurement

Trouble Report Rate - UNE

Definition:

The number of customer trouble reports within a calendar month per 100 UNEs.

Exclusions:

- **Specials and Interconnection Trunks**
- **Excludes UNE Combos captured in the POTS or Specials measurements**
- **Excludes trouble tickets that are coded to Customer Premise Equipment, Interexchange Carrier/Competitive Access Provider, and Informational**
- **Excludes loops without test access - BRI**
- **Excludes DSL loops > 12Kf with load coils, repeaters, and/or excessive bridged tap for which the CLEC has not authorized conditioning unless coded to the Central Office.**
- **Excludes trouble reports caused by lack of digital test capabilities on 2-wire and IDSL capable loops where acceptance testing is available and not selected by the CLEC.**

Business Rules:

Repair reports are entered into and tracked via WFA by trouble ticket.

Reports are counted in the month they post.

Levels of Disaggregation:

- **UNEs contained in the UNE price schedule, and / or agreed to by the parties.**
- **DSL loops with line sharing**
- **DSL loops with no line sharing**

Broadband service product (Note : Additional disaggregations may be required as necessary in the future)

Calculation:

[Count of network trouble reports
÷ (Total UNEs ÷ 100)]

Report Structure:

Reported for CLEC, all CLECs
and SWBT and SWBT affiliates

Benchmark:

Parity:	Retail Comparison
1. 8db loops	Parity with SWBT POTS Business
2. 5.0 dB Loop with Test Access and 5.0 dB Loop without Test Access	Parity with SWBT POTS Business
3. BRI Loop with Test Access	ISDN/BRI
4. ISDN BRI Port	ISDN/BRI
5. DS1 Loop with Test Access	DS1
6. DS1 Dedicated Transport	DS1
7. Subtending Channel (23B)	DDS
8. Subtending Channel (1D)	DDS
9. Analog Trunk Port	VGPL
10. Subtending Digital Direct Combination Trunks	VGPL
11. DS3 Dedicated Transport	DS3
12. Dark Fiber	DS3
13. DSL Loops – Line Sharing	Parity with ASI or SWBT Retail
14. DSL Loops – Non-Line Sharing	3% - No Critical z-value applies
15. Broadband DSL– Line Sharing	Parity with ASI or SWBT Retail
16. Broadband DSL Loops – Non-Line Sharing	3% - No Critical z-value applies

Interconnection

14. Measurement	
Average Trunk Restoration Interval for Service Affecting Trunk Groups	
Definition:	
The average time to restore service affecting trunk groups (measured tickets only).	
Exclusions:	
<ul style="list-style-type: none"> • Customer Caused Outages • Non-measured tickets (CPE, Interexchange, or Informational) • No Access/Delayed Maintenance 	
Business Rules:	
Service affecting is defined as 20% of a trunk group out-of-service that causes trunk group blockage. The clock starts on receipt of a trouble ticket from the CLEC that identifies a service affecting condition. The clock stops after completion of work by SWBT.	
Levels of Disaggregation:	
<ul style="list-style-type: none"> • Tandem trunk groups. • Non-Tandem trunk groups. • By Market Region. • 911 • OS/DA • SS7 • Interconnection Trunks 	
Calculation:	Report Structure:
Total trunk group outage time / total trunk group trouble reports	Reported by CLEC, all CLECs
Benchmark:	
Tandem trunk groups – 1 hour / Non-Tandem – 2 hours.	

15. Measurement
Percent Trunk Blockage
Definition:
Percent of calls blocked on outgoing traffic for alternate final (AF) and direct final (DF) trunk groups from SWBT end office to CLEC end office and from SWBT tandem to CLEC end office
Exclusions:
<ul style="list-style-type: none"> • Excludes Weekend and Holidays • CLECs have trunks busied-out for maintenance at their end, or if they have other network problems which are under their control. • SWBT is ready for turn-up on Due Date and CLEC is not ready or not available for turn-up of trunks. , e.g. not ready to accept traffic from SWBT on the due date or CLEC has no facilities or equipment at CLEC end. • CLEC does not take action upon receipt of Trunk Group Service Request (TGSR) or ASR within 3 business days (day 0 is the business day the TGSR when a Call Blocking situation is identified by SWBT or in the timeframe specified in the InterConnection Agreement (ICA). • If CLEC does not take action upon receipt of TGSR within 10 business days (day 0 as described above) when a pre-service of 75% or greater occupancy situation is identified by SWBT or in the time frame specified in the ICA. • If CLEC fails to provide a forecast within the last six months unless a different timeframe is specified in an interconnection agreement. • For trunks extending from the SWBT tandem to the CLEC end office designated as final trunks, if CLEC's actual trunk usage for a market region, as shown by SWBT from traffic usage studies, is more than 25% above CLEC's most recent forecast for the market region, which must have been provided within the last six-months unless a different timeframe is specified in an interconnection agreement as long as the forecasts are received as described in the accessible letter are received. • For trunks extending from the SWBT end office to the CLEC end office, if CLEC's actual trunk usage for a wirecenter or end office, as shown by SWBT from traffic usage studies, is more than 25% above CLEC's most recent forecast for the wirecenter or end office, which must have been provided within the last six-months unless a different timeframe is specified in an interconnection agreement as long as the forecasts are received as described in the accessible letter are received. • The exclusions do not apply if SWBT fails to timely provide CLEC with traffic utilization data reasonably required for CLEC to develop its forecast or if SWBT refuses to accept CLEC trunk orders (ASRs or TGSRs) that are within the CLEC's reasonable forecast regardless of what the current usage data is.

Business Rules:	
Twenty days of data consisting of blocked calls and total calls are collected and aggregated each month.	
Levels of Disaggregation:	
<ul style="list-style-type: none"> • The SWBT end office to CLEC end office and SWBT tandem to CLEC end office trunk blockage will be reported separately • By Market Region 	
Calculation:	Report Structure:
((Count of blocked calls – excluded blocked calls) ÷ total calls offered – excluded blocked calls) * 100	Reported for CLEC, all CLECs and SWBT
Benchmark:	
Blocked calls on Dedicated Trunk Groups not to exceed blocking standard of B.01 {B.01 standard is 1%}.	

Local Number Portability

16 Measurement (Complete Revision of PM 16 below)
CHC/FDT LNP with Loop Provisioning Interval.
Definition:
The % of CHC/FDT LNP with Loop Lines completed by SWBT within the established provisioning intervals of 60 minutes (1 – 10 lines) and 120 minutes (11 – 24 lines).
Exclusions:
<ul style="list-style-type: none"> • CHC/FDT LNP with Loop with greater than 24 loops (including multiple LSRs totaling 25 or more lines to the same customer premise on the due date). • CLEC caused delays (e.g., no dial tone from CLEC: CLEC translations) that do not allow SWBT the opportunity to complete CHC/FDT LNP with Loop within the designated interval. • IDLC (pair gain systems) identified on or before the due date. (Thirty calendar days after the filing of the IDLC Report as required in the Business Rule, the IDLC exclusion shall be considered deleted).
Business Rules:
<p>The start time is at the direction of the CLEC and based on a negotiated and scheduled time for coordinated hot cut orders (CHC) and on the frame due time for frame due time (FDT). For CHC orders, the clock starts when the CLEC calls the SWBT LOC to start the conversion, and ends when the SWBT technician completes the cross connect to the CLEC facilities and has called the CLEC to notify that the cut-over has been completed. For FDT orders, the clock starts at the frame due time and ends when the SWBT technician completes the cross connect to the CLEC facilities. This measurement only includes Coordinated Hot Cuts and Frame Due Time with 1-24 loops. A conversion with 25 or more lines (including multiple orders totaling 25 or more lines to the same customer premise on the same due date) is considered a project and is negotiated with the CLEC at the time of conversion.</p> <p>On or before June 30, 2001, SWBT and the CLECs shall file with the Commission a report regarding the collaborative efforts to define, test, and implement a process to handle conversions when IDLC situations occur (the IDLC Report).</p>
Levels of Disaggregation:

CHC LNP with loop <ul style="list-style-type: none"> • 1- 10 lines • 11-24 lines FDT LNP with loop <ul style="list-style-type: none"> • 1-10 lines • 11-24 lines 	
Calculation:	Report Structure:
Total CHC/FDT LNP with Loop Lines within the designated interval ÷ total CHC/FDT LNP with Loop lines.	Reported by CLEC and all CLECs.
Benchmark:	
95%. Payments will only be paid on the combined performance for CHC and FDT.	

B. Collocation

17. Measurement	
Percent Missed Collocation Due Dates	
Definition:	
The percent of SWBT caused missed due dates for Collocation projects.	
Exclusions:	
None	
Business Rules:	
<p>The clock starts when SWBT receives, in compliance with the approved tariff, payment and return of proposed layout for space as specified in the application form from the CLEC and the clock stops when the CLEC receives notice in writing or other method agreed to by the parties that the collocation arrangement is complete and ready for CLEC occupancy. The CLEC will then have 5 business days to accept or not accept the collocation space. If the CLEC does not accept the collocation space because the space is not complete and ready for occupancy as specified, and notifies SWBT of such within 5 business days, the collocation will be considered not complete and the time frame required for the CLEC to reject the collocation space (up to 5 business days) and any additional time required for SWBT to complete the space per the specifications will be counted as part of the interval. Any time exceeding the 5 business days will not be counted as part of the interval. Due Date Extensions will be extended when mutually agreed to by SWBT and the CLEC, or when a CLEC fails to complete work items for which they are responsible in the allotted time frame. The extended due date will be calculated by adding to the original due date the number of calendar days that the CLEC was late in performing said work items. Work items include but are not limited to:</p> <ul style="list-style-type: none"> • CLEC return to SWBT corrected and complete floor plan drawings • CLEC placement of required component(s) • If the business rules and tariff are inconsistent, the terms of the tariff will apply. 	
Levels of Disaggregation:	
<p>Physical</p> <ul style="list-style-type: none"> • Caged • Shared Caged • Caged Common • Cageless • Adjacent On-site • Adjacent Off-site • Augments to Physical Collocation • Virtual • Augments to Virtual. 	
Calculation:	Report Structure:

(count of number of SWBT caused missed due dates for collocation facilities ÷ total number of collocation projects) * 100	Reported for individual CLEC and all CLECs and SWB affiliate.
Benchmark:	
95% within the due date. Damages and Assessments will be calculated based on the number of days late. Critical z-value does not apply.	

Billing

18. Measurement	
Mechanized Electronic Billing Timeliness EDI and BDT (Wholesale Bill)	
Definition:	
Mechanized Electronic Billing Timeliness measures the length of time from the billing date to the time it is sent or transmitted (made available) to the CLECs.	
Exclusions:	
Excludes Weekends and Holidays Excludes test transmissions	
Business Rules:	
The transmission date is used to gather the data for the reporting period. The measurement counts the number of workdays between the bill day and transmission date for each bill.	
Levels of Disaggregation:	
<ul style="list-style-type: none"> • EDI • BDT <p>To the extent SWBT sends bills to CLECs using other application to application processes other than EDI or BDT, SWBT will include those bills in this measure, separately disaggregated or not, as appropriate, with notice to CLECs of the change.</p>	
Calculation:	Report Structure:
(Count of mechanized electronic bills transmitted on time ÷ total number of bills released) * 100	Reported for CLEC and all CLECs and ASI where applicable
Benchmark:	
95% within 6 th workday. Critical z-value does not apply for EDI. Critical z-value applies for BDT.	

OSS

19. Measurement	
OSS Interface Availability	
Definition:	
Percent of time OSS interface is available compared to scheduled availability.	
Exclusions:	
None	
Business Rules:	
<p>The total “number of hours functionality to be available” is the cumulative number of hours (by date and time on a 24 hour clock) over which SWBT plans to offer and support CLEC access to SWBT’s operational support systems (OSS) functionality during the reporting period. “Hours Functionality is Available” is the actual number of hours, during scheduled available time, that the SWBT interface is capable of accepting or receiving CLEC transactions or data files for processing through the interface and supporting operational support systems (OSS). The actual time available is divided by the scheduled time available and then multiplied by 100 to produce the “percent system availability” measure. SWBT will not schedule normal maintenance during business hours (8 am. to 5:30 PM. Monday through Friday). When interfaces experience partial unavailability, an availability factor is applied to the calculation of downtime. This factor is stated as a percentage and represents the impact to the CLEC. Determination of the availability factor is governed by SWBT’s Availability Team on a case by case basis. SWBT’s availability team shall provide to CLECs the information supporting the use of any availability factor multiplier used in reporting this measurement. SWBT shall calculate the availability time rounded to the nearest minute.</p>	
Levels of Disaggregation:	
<ul style="list-style-type: none"> • EASE reported for Consumer and Business • EDI reported by protocol (SSL3, FTP, NDM, VAN) • EDI/CORBA for Pre-order • DataGate • Verigate • LEX • RAF – By CLEC • TOOLBAR • Order Status • Trouble Administration • Provisioning Order Status • Solid GUI (Diagnostic) 	
Calculation:	Report Structure:

((Hours functionality is available during the scheduled available hours) ÷ Scheduled system available hours)) * 100	Reported on an aggregate CLEC basis by interface e.g. EASE, DATAGATE, VERIGATE, LEX, EDI and TOOLBAR. The RAF will be reported on an individual CLECs basis
Benchmark:	
99.5%. The critical z allowance does not apply on this measurement.	
No damages are applicable for Solid GUI. This will be reviewed in 6 months.	

Interconnection

20. Measurement	
Common Transport Trunk Blockage	
Definition:	
Percentage of local common transport trunk groups exceeding 2% blockage.	
Exclusions:	
No data is collected on weekends or holidays.	
Business Rules:	
Common transport trunk groups that reflect blocking in excess of 2% and 1% (if a separate common transport trunk group is established to carry CLEC traffic only) using a time consistent busy hour from the four most recent weeks of data.	
Levels of Disaggregation:	
<ul style="list-style-type: none"> • Common trunk groups where CLECs share ILEC trunks, and Common trunk groups for CLECs not shared by ILEC. • By Market Region. 	
Calculation:	Report Structure:
(Number of common transport trunk groups exceeding 2% blocking ÷ total common transport trunk groups) * 100.	Reported on local common transport trunk groups.
Benchmark:	
3% of trunk groups not to exceed 2% blocking. SWBT shall compare common trunk groups exceeding 1% blockage, reported for switch based CLECs, be compared to SWBT's dedicated trunk groups designed for B.01 standard for parity compliance (if a separate common transport trunk group is established to carry CLEC traffic only).	

Attachment A-3

**CALCULATION OF
PARITY AND BENCHMARK PERFORMANCE
AND VOLUNTARY PAYMENTS**

I. Z-Tests

- Modified Z-tests, as outlined below, will be used to determine parity when comparing an SBC/Ameritech incumbent LEC's and the CLEC's results for the difference between two means or two percentages, or the difference in two proportions.
- The modified Z-tests are applicable if the number of data points is greater than 30 for averages or means. For measurements with less than 30 data points SWBT may use the permutations test or Alternative-1 described under "Qualifications to use Z-Test heading below.
- Parity exists when the measured results in a single month (whether in the form of means, percents, or proportions) for the same measurement, at equivalent disaggregation, for both SWBT and the CLEC are used to calculate a Z-test statistic and the resulting value is no greater than the critical Z-value as discussed below.
- For parity measurement results that are expressed as averages or means:

$$Z = (\text{DIFF}) / \delta_{\text{DIFF}}$$

Where;

$$\text{DIFF} = M_{\text{ILEC}} - M_{\text{CLEC}}$$

M_{ILEC} = ILEC Average

M_{CLEC} = CLEC Average

$$\delta_{\text{DIFF}} = \text{SQRT} [\delta_{\text{ILEC}}^2 (1/n_{\text{CLEC}} + 1/n_{\text{ILEC}})]$$

δ_{ILEC}^2 = Calculated variance for ILEC.

n_{ILEC} = number of observations or samples used in ILEC measurement

n_{CLEC} = number of observations or samples used in CLEC measurement

- For benchmark measurement results that are expressed as averages or means:

$$Z = (\text{DIFF}) / 1$$

Where;

$$\text{DIFF} = \text{Benchmark} - M_{\text{CLEC}}$$

M_{CLEC} = CLEC Average

For parity measurement results that are expressed as percentages or proportions:

Step 1:

$$\rho = \frac{(n_{ILEC}P_{ILEC} + n_{CLEC}P_{CLEC})}{n_{ILEC} + n_{CLEC}}$$

Step 2:

$$\sigma_{PILEC-PCLEC} = \sqrt{[\rho(1-\rho)]/n_{ILEC} + [\rho(1-\rho)]/n_{CLEC}}$$

Step 3:

$$Z = (P_{ILEC} - P_{CLEC})/\sigma_{PILEC-PCLEC}$$

Where: n = Number of Observations

P = Percentage or Proportion

- For benchmark measurement results that are expressed as percentages or proportions:

$$Z = (\text{benchmark} - P_{CLEC})/1$$

Where: n = Number of Observations

P_{clec} = Percentage or Proportion for CLEC

- For measurement results that are expressed as rates or a ratio:

$$Z = (\text{DIFF}) / \delta_{\text{DIFF}}$$

Where;

$$\text{DIFF} = R_{ILEC} - R_{CLEC}$$

$$R_{ILEC} = \text{num}_{ILEC} / \text{denom}_{ILEC}$$

$$R_{CLEC} = \text{num}_{CLEC} / \text{denom}_{CLEC}$$

$$\delta_{\text{DIFF}} = \text{SQRT} [R_{ILEC} (1/\text{denom}_{CLEC} + 1/\text{denom}_{ILEC})]$$

II. Qualifications To Use Z-Test:

- The proposed Z-tests are applicable to reported measurements that contain 30 or more data points.
- For measurements where the performance delivered to CLEC is compared to SWBT performance and for which the number of data points are 29 or less, The following Alternative may be used:

Alternative 1:

1. For measurements that are expressed as averages, performance delivered to a CLEC for each observation shall not exceed the ILEC averages plus the applicable critical Z-value. If the CLEC's performance is outside the ILEC average plus the critical Z-value and it is the second consecutive month, SWBT can utilize the Z-test as applicable for sample sizes 30 or greater or the permutation test to provide evidence of parity. If SWBT uses the Z-test for samples under 30, the CLEC can independently perform the permutation test to validate SWBT's results.
2. For measurements that are expressed as percentages, the percentage for CLEC shall not exceed ILEC percentage plus the applicable critical Z-value. If the CLEC's performance is outside the ILEC percentage plus the critical Z-value and it is the second consecutive month, SWBT can utilize the Z-test as applicable for sample sizes 30 or greater or the permutation test to provide evidence of parity. If SWBT uses the Z-test for samples under 30, the CLEC can independently perform the permutation test to validate SWBT's results.

Alternative 2:

Permutation analysis will be applied to calculate the z-statistic using the following logic:

1. Choose a sufficiently large number T.
2. Pool and mix the CLEC and ILEC data sets
3. Randomly subdivide the pooled data sets into two pools, one the same size as the original CLEC data set (n_{CLEC}) and one reflecting the remaining data points, (which is equal to the size of the original ILEC data set or n_{ILEC}).
4. Compute and store the Z-test score (Z_S) for this sample.
5. Repeat steps 3 and 4 for the remaining T-1 sample pairs to be analyzed. (If the number of possibilities is less than 1 million, include a programmatic check to prevent drawing the same pair of samples more than once).
6. Order the Z_S results computed and stored in step 4 from lowest to highest.
7. Compute the Z-test score for the original two data sets and find its rank in the ordering determined in step 6.
8. Repeat the steps 2-7 ten times and combine the results to determine $P = (\text{Summation of ranks in each of the 10 runs divided by } 10T)$
9. Using a cumulative standard normal distribution table, find the value Z_A such that the probability (or cumulative area under the standard normal curve) is equal to P calculated in step 8.
10. Compare Z_A with the desired critical value as determined from the critical Z table. If $Z_A >$ the designated critical Z-value in the table, then the performance is non-compliant.

III. Critical Z-Test Value

The following table will be used for determining the Critical Z-value for each measurement. The table can be extended to include CLECs with fewer performance measurements.

Critical Z - Statistic Table

Number of Performance Measurements	Critical Z-value
10-19	1.79
20-29	1.73
30-39	1.68
40-49	1.81
50-59	1.75
60-69	1.7
70 –79	1.68
80 – 89	1.74
90 – 99	1.71
100 – 109	1.68
110 –119	1.7
120 – 139	1.72
140 – 159	1.68
160 – 179	1.69
180 – 199	1.7
200 – 249	1.7
250 – 299	1.7
300 – 399	1.7
400 – 499	1.7
500 – 599	1.72
600 – 699	1.72
700 – 799	1.73
800 – 899	1.75
900 – 999	1.77
1000 and above	Calculated for Type-1 Error Probability of 5%